# CONNECTORIZED MULTIPLEX SHELF (MS19/WC7, MS19/WC5, MS19/C7 AND MS19/C6), 628003, 628008, 628013 AND 628018 (FOR 19-INCH BAYS) OPTION SELECTION, INSTALLATION AND PRETEST

This Section provides instructions to select options on, install, and test D448 multiplex shelves, 628003, 628008, 628013 and 628018.

This Section has been reissued to clarify the −48V talk battery installation and add information on the Group -003 multiplex shelf for use with dataport channel units.

Option selection consists of selecting different strapping options for each digroup on the rear of the backplane. Installation of the multiplex shelf consists of physically mounting the shelf in a relay rack and making external wiring connections to the shelf backplane. Various channel unit voice frequency (VF) and signaling leads are connectorized on the different versions of the shelf. Testing consists of checking voltages on input battery, talk battery, 20-Hz ringing, and −48-alarm battery source (ABS) for the proper connection and voltage levels.

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## CHART 1

## INSPECTION

**APPARATUS:**

None

| STEP | PROCEDURE |
|---|---|
| 1 | Remove multiplex shelf from shipping carton. |
| 2 | Perform an inventory to verify that all equipment listed on the packing list is present. |
| 3 | Inspect shelf for damage due to shipping. Report any damage to carrier immediately. |

## CHART 2

## MOUNTING

**APPARATUS:**

Standard hand tools as required (see Section ITTR-18-400)

| STEP | PROCEDURE |
|---|---|
| 1 | Ensure rear cover is in place to provide protection to wire-wrap pins during installation. |
| 2 | Position shelf at desired height in relay rack. |
| 3 | Secure shelf to relay rack by installing two 12-24 screws, flat washers, and lock washers at each of the four mounting flanges (one flange at each corner). The screws and washers are supplied in a cloth bag marked 600004-205-003. |

## CHART 3

## OPTION SELECTION

**APPARATUS:**

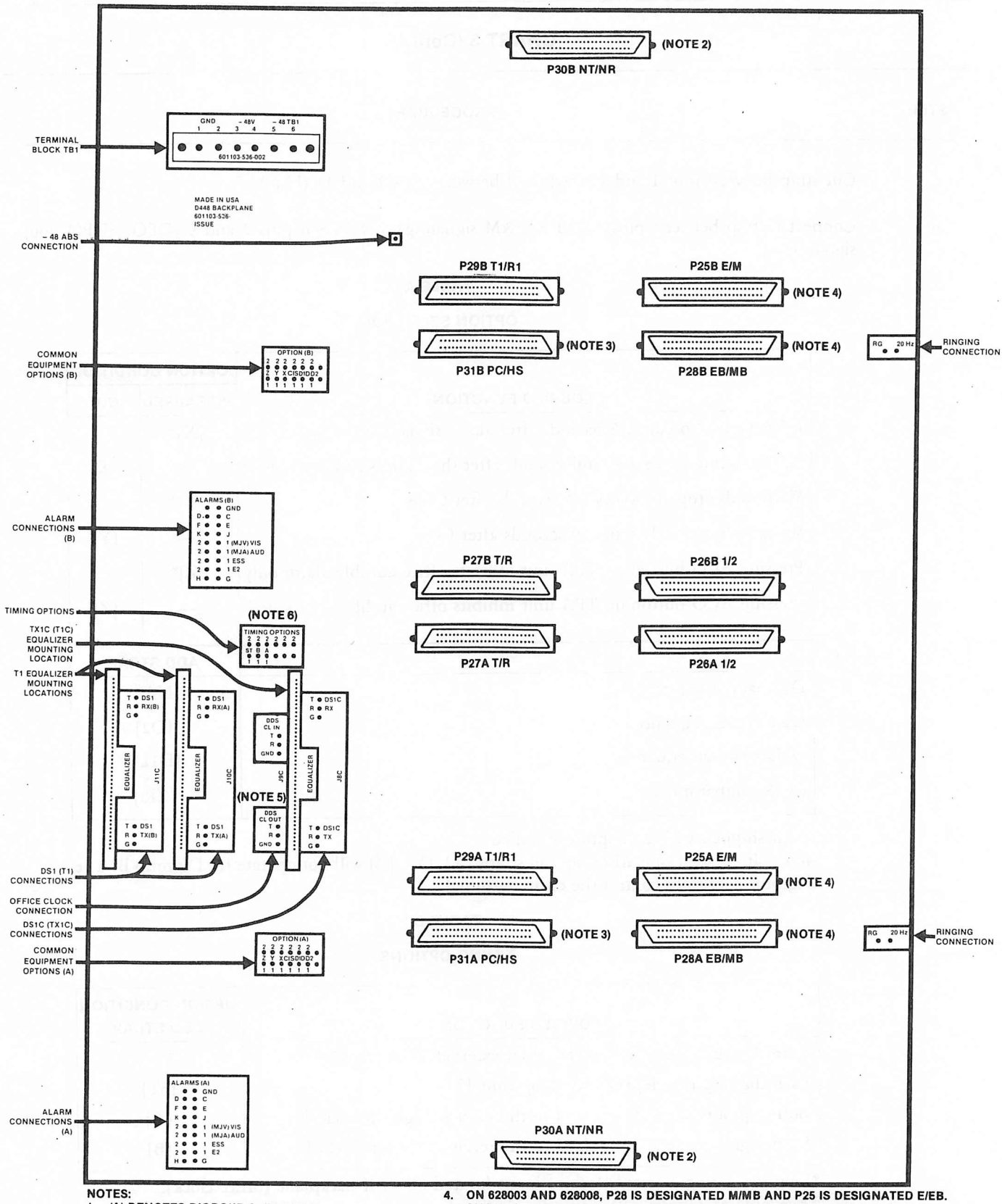
Standard hand tools as required (see Section ITTR-18-400)

1—26AWG bit (Gardner-Denver 505279)

1—Sleeve (Gardner-Denver 507100)

1—Unwrap tool (Gardner-Denver 509489)

| STEP | PROCEDURE |
|---|---|
| | ***Note:*** The multiplex shelf is equipped with strapping options for various functions. The common equipment options are located on the left side of the backplane (Fig. 1). The timing options are located in the middle of the backplane above the equalizers (Fig. 1). The channel unit options are located on each channel unit connector. |
| 1 | Select common equipment options on the backplane in accordance with Table A. |
| 2 | Install TIMING OPTIONS on the backplane in accordance with Table B. These options are only functional when an office interface unit/loop timing (OIU/LT), 628090, is used in the terminal. |
| | ***Note:*** If type II (loop) signaling is required for any channel unit, perform Steps 3 and 4 on the associated 60-pin connector for each channel unit as required. If this is not required, proceed to Chart 4. |




NOTES:
1. (A) DENOTES DIGROUP A; (B) DENOTES DIGROUP B.
2. NOT SUPPLIED ON 628008 AND 628018.
3. NOT SUPPLIED ON 628008.
4. ON 628003 AND 628008, P28 IS DESIGNATED M/MB AND P25 IS DESIGNATED E/EB.
5. ON THE GROUP -001 MULTIPLEX SHELF, DDS CL OUT IS DESIGNATED OFFICE CLOCK AND DDS CL IN DOES NOT EXIST.
6. ON THE GROUP -003 MULTIPLEX SHELF, OPTION [ST] IS FOR FUTURE USE.

Fig. 1—D448 Backplane Layout

## CHART 3 (Cont)

| STEP | PROCEDURE |
|---|---|
| 3 | Cut strap between pins 1 and 11 (red) and between pins 2 and 11 (blue). |
| 4 | Connect a strap between pins 1 and 8 (E&M signaling) or between pins 2 and 9 (DPO, SDPO, loop signaling). |

**TABLE A**

**OPTION SELECTION**

| REQUIRED FUNCTION | OPTION CONDITION | |
|---|---|---|
| | STRAPPED | CUT |
| CGA ground occurs 2.5 seconds after alarm signal is received. | [X]* | — |
| CGA ground occurs 450 milliseconds after the alarm signal is received. | — | [X] |
| Wink pulse (open) occurs 2.5 seconds after CGA. | [Y]* | — |
| Wink pulse (open) occurs 10 seconds after CGA. | — | [Y] |
| Pressing ACO button on TPA unit inhibits office audible alarm only. | [Z]* | — |
| Pressing ACO button on TPA unit inhibits office audible and visual alarms. | — | [Z] |
| | ADD STRAP | |
| D3 channel sequence | NA* | |
| D2 channel sequence | [D2] | |
| D1D channel sequence | [D1D] | |
| CCIS compatibility | [CIS] | |

*Unit shipped with this option installed.

***Note:*** In Mode 1 operation, option straps [X], [Y], [Z] will not operate for Digroup B. The Digroup A options control the entire terminal.

**TABLE B**

**TIMING OPTIONS**

| REQUIRED FUNCTION | OPTION CONDITION ADD STRAP |
|---|---|
| Both digroups are synchronized to an external office clock*† | [OC] |
| Each digroup is independently loop timed‡ | [ST] |
| Both digroups are synchronized to the receive Digroup A clock | [A] |
| Both digroups are synchronized to the receive Digroup B clock | [B] |

*Requires wiring external clock to input located on shelf backplane (office clock).

†Available on Group -001 multiplex shelf only.

‡Available on Group -003 multiplex shelf only (future).

# CHART 4

## ELECTRICAL INSTALLATION

**APPARATUS:**

Standard hand tools as required (see Section ITTR-18-400)

1—Soldering iron and solder

1—26AWG bit (Gardner-Denver 505279 or equivalent)

1—24AWG bit (Gardner-Denver 505415 or equivalent)

1—22AWG bit (Gardner-Denver 504939 or equivalent)

1—26AWG sleeve (Gardner-Denver 507100 or equivalent)

1—24AWG sleeve (Gardner-Denver 502129 or equivalent)

1—22AWG sleeve (Gardner-Denver 507939 or equivalent)

1—Unwrap tool (Gardner-Denver 509489 or equivalent)

| STEP | PROCEDURE |
|---|---|
| | ***Note 1:*** Refer to Fig. 1 during this procedure. |
| | ***Note 2:*** If the multiplex shelf is being used with fuse, alarm and distribution panel (FADP), 628492, refer to Section ITTR-18-492 for information on FADP wiring. |
| | **– 48V BATTERY WIRING CONNECTION (FIG. 2)** |
| 1 | At the power board or FADP, remove the fuse supplying – 48V battery to the multiplex shelf. |
| 2 | Remove multiplex shelf rear cover. |
| 3 | On left side of relay rack (rear view), dress 14AWG stranded – 48V power cable between power source and multiplex shelf (TB1-3). Cut to length. |
| 4 | Strip – 48V power cable insulation approximately 1/4 inch on each end, and attach 14AWG spade terminals. |
| 5 | Connect one end of – 48V power cable to multiplex shelf (TB1-3). Connect other end to power source. |
| 6 | Measure cable run distance between relay rack ground bus and multiplex shelf GND terminal (TB1-1). Cut to length 14AWG insulated, stranded ground cable. |
| 7 | Strip one end of ground cable insulator 1 inch, wrap to left side of relay rack (rear view), ground bus, and solder. Strip other end of ground cable insulator 1/4 inch, attach 14AWG spade lug, and connect to multiplex shelf GND terminal (TB1-1). |

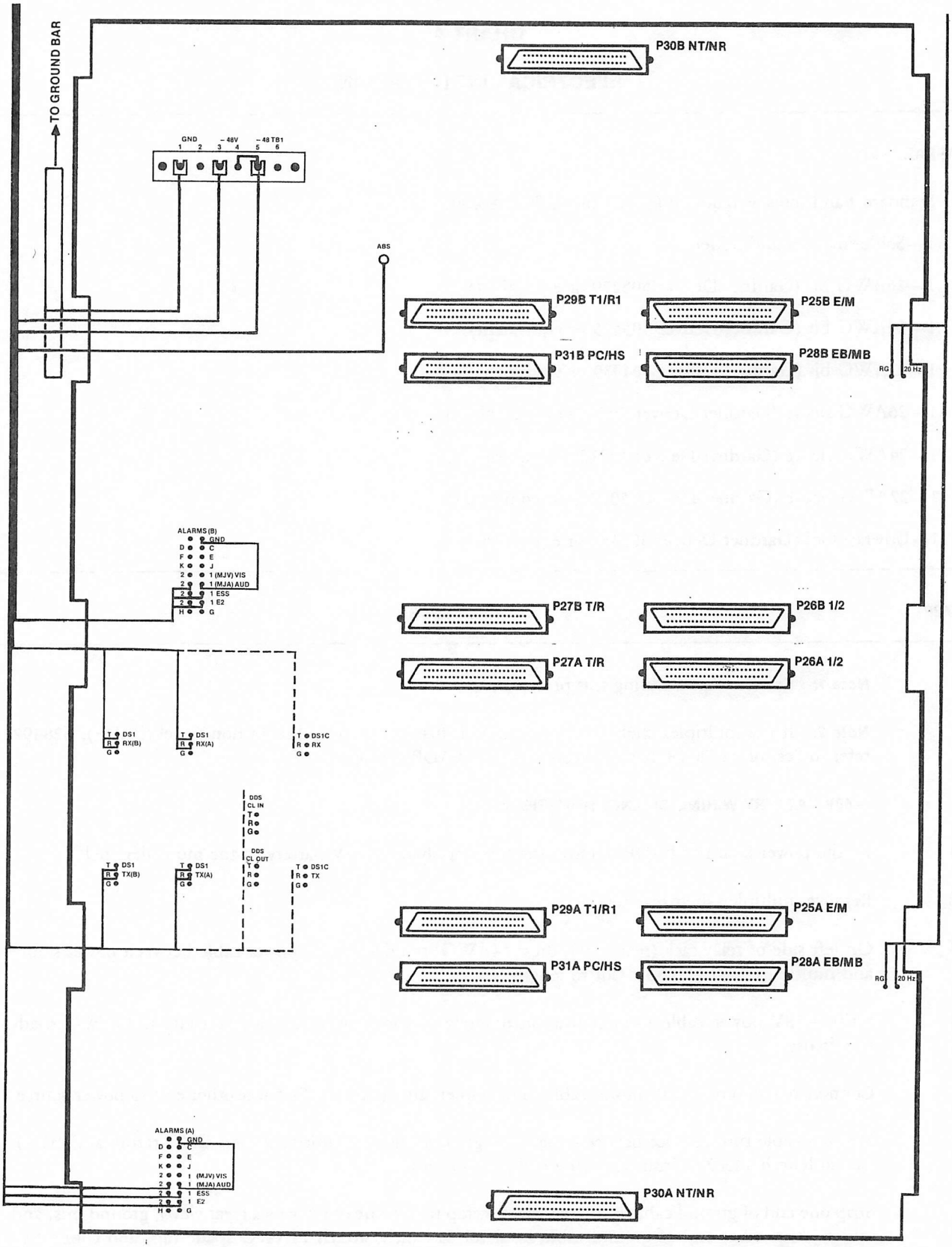



Fig. 2—Wiring Routing

## CHART 4 (Cont)

| STEP | PROCEDURE |
|---|---|

**– 48V TALK BATTERY CONNECTIONS (FIG. 2)**

***Note:*** Perform Steps 8 through 11 only if C.O. battery supply exceeds 40-dBrnC noise level, or if local practice requires separate talk battery supply.

8 Remove the strap between TB1-4 and TB1-5.

9 On left side of relay rack (rear view), dress 14AWG stranded – 48V talk battery cable between power source and multiplex shelf (TB1-5). Cut to length.

10 Strip – 48V talk battery cable insulator approximately 1/4 inch on each end and attach 14AWG spade terminals.

11 Connect one end of – 48V talk battery cable to multiplex shelf (TB1-5). Connect other end to power source.

**48V ABS CONNECTION (FIG. 2)**

***Note:*** Connecting – 48 ABS to the shelf is optional.

12 Cut 22AWG insulated, solid wire to required length between – 48 ABS supply connection point and the – 48 ABS pin on the shelf.

13 Dress wire along left side of rack (rear view).

14 Connect one end of the wire to the multiplex shelf and the other end to power source.

**RINGING VOLTAGE CONNECTION (FIG. 2)**

***Note:*** Perform Steps 15 through 17 when any channel unit to be used requires 20-Hz negative superimposed ringing voltage.

15 At the ringing voltage source, remove the fuse supplying ringing voltage to the shelf.

***DANGER: Verify that the ringing voltage is removed from the connection point.***

16 Cut 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent) to the required length to connect ringing voltage to the shelf.

17 Dress cable along right side of rack (rear view).

18 Connect one end of cable to the multiplex shelf and the other end to ringing supply.

**DS1 (T1) HF WIRING CONNECTION (FIG. 2)**

***Note:*** Make DS1 (T1) connections only if Mode 3 operation is being installed at this time. If Mode 1 or 2 is being installed, proceed directly to DS1C (TX1C) HF wiring (Step 23).

## CHART 4 (Cont)

| STEP | PROCEDURE |
|---|---|

19 Cut ABAM-type cable or 24AWG solid twisted shielded pair cable (ITT Part No. 600015-100-241 or equivalent) to the required length to connect shelf to FADP, line termination shelf, or DSX cross-connect.

20 Dress cable along left side of rack (rear view).

21 Make connections as shown in Table C. The connection points are wire-wrap pins and are located near connectors J7C and J8C.

**TABLE C**

**T1 HF WIRING CONNECTIONS**

| DIGROUP A | DIGROUP B |
|---|---|
| **TRANSMIT PAIR:** | |
| Tip — DS1 TX(A) — T | Tip — DS1 TX(B) — T |
| Ring — DS1 TX(A) — R | Ring — DS1 TX(B) — R |
| Shield — GND at one end | Shield — GND at one end |
| **RECEIVE PAIR:** | |
| Tip — DS1 RX(A) — T | Tip — DS1 RX(B) — T |
| Ring — DS1 RX(A) — R | Ring — DS1 RX(B) — R |
| Shield — GND at one end | Shield — GND at one end |

22 Connect transmit and receive cables, observing tip and ring integrity, to HF connection point.

**DS1C (T1C) HF WIRING CONNECTIONS (FIG. 1)**

***Note:*** DS1C (TX1C) HF pairs are required for Mode 1 and 2 operations only. Installation of this cable when Mode 3 operation is being used is recommended if other modes are present in the office, future plans call for change out to another mode, or DS1C tie points exist.

23 Cut ABAM-type cable or 24AWG solid twisted shielded pair cable to the required length to connect the shelf to the FADP, line termination shelf, or DSX1C cross-connect.

24 Dress cable along left side of rack (rear view) on the 23-inch shelf and along left side of rack (rear view) on the 19-inch shelf.

25 Connect the transmit and receive cables to backplane pins, as shown in Table D. The connection points are wire-wrap pins and are located near connectors J3C and J4C.

## CHART 4 (Cont)

| STEP | PROCEDURE |
|---|---|

**TABLE D**

**DS1C (T1C) HF WIRING CONNECTIONS**

| DS1C (TX1C) TRANSMIT PAIR | DS1C (TX1C) RECEIVE PAIR |
|---|---|
| Tip — DS1C TX — T<br>Ring — DS1C TX — R<br>Shield — GND at one end | Tip — DS1C RX — T<br>Ring — DS1C RX — R<br>Shield — GND at one end |

**ALARM CONNECTIONS (FIG. 2)**

***Note:*** Alarm connections (E2, ESS, AUD, and VIS) are located on the left of the backplane near connectors J6C through J15C.

26 Cut 24AWG wire to required length to connect shelf to FADP or office alarm system.

27 Dress wires along left side of rack (rear view).

28 Wire-wrap alarm connections to backplane pins.

***Note:*** For each alarm (E2, ESS, AUD, VIS), wire pin 2 to activating signal (ground) and pin 1 to office alarm.

29 Connect alarm loops to office alarm systems or FADP, Digroup A and B (E2, ESS, AUD, and VIS).

**CONNECTOR WIRING PROCEDURE (FIG. 3)**

30 Measure and record the distance from the office connection points to each VF connector on the multiplex shelf.

31 Cut 24AWG switchboard-type cable to each length recorded in Step 30.

32 Wire an Amphenol 157-82500-3, Cinch 57-84500-5, or equivalent, connector to one end of each of the cables cut in Step 31. See Tables E or F as required for wiring information.

33 Mate each of the J connectors to the corresponding P connectors on the multiplex shelf. Cable routing is shown in Fig. 3.

34 Wire each of the cables to the proper office connection point.

**NON-CONNECTORIZED WIRING**

***CAUTION: Use 26AWG bit on wire-wrap tool.***

## TABLE E

## 628003 AND 628008 MULTIPLEX SHELF CONNECTOR WIRING

| CHAN # | P25 | | | P26 | | | P27 | | | P28 | | | P29 | | | P30* | | | P31* | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MDF | P25 J25 PIN # | CU PIN # | MDF | P26 J26 PIN # | CU PIN # | MDF | P27 J27 PIN # | CU PIN # | MDF | P28 J28 PIN # | CU PIN # | MDF | P29 J29 PIN # | CU PIN # | MDF | P30 J30 PIN # | CU PIN # | MDF | P31 J31 PIN # | CU PIN # |
| 1 | E | 26 | 31 | 1/S | 26 | 32 | T | 26 | 3 | M/ATB | 26 | 35 | T1/A | 26 | 33 | NT/TSX | 26 | 5 | PC/OS | 26 | 7 |
| | EB | 1 | 8 | 2 | 1 | 9 | R | 1 | 4 | MB | 1 | 36 | R1/B | 1 | 34 | NR/RSX | 1 | 6 | HS | 1 | 37 |
| 2 | E | 27 | 31 | 1/S | 27 | 32 | T | 27 | 3 | M/ATB | 27 | 35 | T1/A | 27 | 33 | NT/TSX | 27 | 5 | PC/OS | 27 | 7 |
| | EB | 2 | 8 | 2 | 2 | 9 | R | 2 | 4 | MB | 2 | 36 | R1/B | 2 | 34 | NR/RSX | 2 | 6 | HS | 2 | 37 |
| 3 | E | 28 | 31 | 1/S | 28 | 32 | T | 28 | 3 | M/ATB | 28 | 35 | T1/A | 28 | 33 | NT/TSX | 28 | 5 | PC/OS | 28 | 7 |
| | EB | 3 | 8 | 2 | 3 | 9 | R | 3 | 4 | MB | 3 | 36 | R1/B | 3 | 34 | NR/RSX | 3 | 6 | HS | 3 | 37 |
| 4 | E | 29 | 31 | 1/S | 29 | 32 | T | 29 | 3 | M/ATB | 29 | 35 | T1/A | 29 | 33 | NT/TSX | 29 | 5 | PC/OS | 29 | 7 |
| | EB | 4 | 8 | 2 | 4 | 9 | R | 4 | 4 | MB | 4 | 36 | R1/B | 4 | 34 | NR/RSX | 4 | 6 | HS | 4 | 37 |
| 5 | E | 30 | 31 | 1/S | 30 | 32 | T | 30 | 3 | M/ATB | 30 | 35 | T1/A | 30 | 33 | NT/TSX | 30 | 5 | PC/OS | 30 | 7 |
| | EB | 5 | 8 | 2 | 5 | 9 | R | 5 | 4 | MB | 5 | 36 | R1/B | 5 | 34 | NR/RSX | 5 | 6 | HS | 5 | 37 |
| 6 | E | 31 | 31 | 1/S | 31 | 32 | T | 31 | 3 | M/ATB | 31 | 35 | T1/A | 31 | 33 | NT/TSX | 31 | 5 | PC/OS | 31 | 7 |
| | EB | 6 | 8 | 2 | 6 | 9 | R | 6 | 4 | MB | 6 | 36 | R1/B | 6 | 34 | NR/RSX | 6 | 6 | HS | 6 | 37 |
| 7 | E | 32 | 31 | 1/S | 32 | 32 | T | 32 | 3 | M/ATB | 32 | 35 | T1/A | 32 | 33 | NT/TSX | 32 | 5 | PC/OS | 32 | 7 |
| | EB | 7 | 8 | 2 | 7 | 9 | R | 7 | 4 | MB | 7 | 36 | R1/B | 7 | 34 | NR/RSX | 7 | 6 | HS | 7 | 37 |
| 8 | E | 33 | 31 | 1/S | 33 | 32 | T | 33 | 3 | M/ATB | 33 | 35 | T1/A | 33 | 33 | NT/TSX | 33 | 5 | PC/OS | 33 | 7 |
| | EB | 8 | 8 | 2 | 8 | 9 | R | 8 | 4 | MB | 8 | 36 | R1/B | 8 | 34 | NR/RSX | 8 | 6 | HS | 8 | 37 |
| 9 | E | 34 | 31 | 1/S | 34 | 32 | T | 34 | 3 | M/ATB | 34 | 35 | T1/A | 34 | 33 | NT/TSX | 34 | 5 | PC/OS | 34 | 7 |
| | EB | 9 | 8 | 2 | 9 | 9 | R | 9 | 4 | MB | 9 | 36 | R1/B | 9 | 34 | NR/RSX | 9 | 6 | HS | 9 | 37 |
| 10 | E | 35 | 31 | 1/S | 35 | 32 | T | 35 | 3 | M/ATB | 35 | 35 | T1/A | 35 | 33 | NT/TSX | 35 | 5 | PC/OS | 35 | 7 |
| | EB | 10 | 8 | 2 | 10 | 9 | R | 10 | 4 | MB | 10 | 36 | R1/B | 10 | 34 | NR/RSX | 10 | 6 | HS | 10 | 37 |
| 11 | E | 36 | 31 | 1/S | 36 | 32 | T | 36 | 3 | M/ATB | 36 | 35 | T1/A | 36 | 33 | NT/TSX | 36 | 5 | PC/OS | 36 | 7 |
| | EB | 11 | 8 | 2 | 11 | 9 | R | 11 | 4 | MB | 11 | 36 | R1/B | 11 | 34 | NR/RSX | 11 | 6 | HS | 11 | 37 |
| 12 | E | 37 | 31 | 1/S | 37 | 32 | T | 37 | 3 | M/ATB | 37 | 35 | T1/A | 37 | 33 | NT/TSX | 37 | 5 | PC/OS | 37 | 7 |
| | EB | 12 | 8 | 2 | 12 | 9 | R | 12 | 4 | MB | 12 | 36 | R1/B | 12 | 34 | NR/RSX | 12 | 6 | HS | 12 | 37 |
| 13 | E | 38 | 31 | 1/S | 38 | 32 | T | 38 | 3 | M/ATB | 38 | 35 | T1/A | 38 | 33 | NT/TSX | 38 | 5 | PC/OS | 38 | 7 |
| | EB | 13 | 8 | 2 | 13 | 9 | R | 13 | 4 | MB | 13 | 36 | R1/B | 13 | 34 | NR/RSX | 13 | 6 | HS | 13 | 37 |
| 14 | E | 39 | 31 | 1/S | 39 | 32 | T | 39 | 3 | M/ATB | 39 | 35 | T1/A | 39 | 33 | NT/TSX | 39 | 5 | PC/OS | 39 | 7 |
| | EB | 14 | 8 | 2 | 14 | 9 | R | 14 | 4 | MB | 14 | 36 | R1/B | 14 | 34 | NR/RSX | 14 | 6 | HS | 14 | 37 |
| 15 | E | 40 | 31 | 1/S | 40 | 32 | T | 40 | 3 | M/ATB | 40 | 35 | T1/A | 40 | 33 | NT/TSX | 40 | 5 | PC/OS | 40 | 7 |
| | EB | 15 | 8 | 2 | 15 | 9 | R | 15 | 4 | MB | 15 | 36 | R1/B | 15 | 34 | NR/RSX | 15 | 6 | HS | 15 | 37 |
| 16 | E | 41 | 31 | 1/S | 41 | 32 | T | 41 | 3 | M/ATB | 41 | 35 | T1/A | 41 | 33 | NT/TSX | 41 | 5 | PC/OS | 41 | 7 |
| | EB | 16 | 8 | 2 | 16 | 9 | R | 16 | 4 | MB | 16 | 36 | R1/B | 16 | 34 | NR/RSX | 16 | 6 | HS | 16 | 37 |
| 17 | E | 42 | 31 | 1/S | 42 | 32 | T | 42 | 3 | M/ATB | 42 | 35 | T1/A | 42 | 33 | NT/TSX | 42 | 5 | PC/OS | 42 | 7 |
| | EB | 17 | 8 | 2 | 17 | 9 | R | 17 | 4 | MB | 17 | 36 | R1/B | 17 | 34 | NR/RSX | 17 | 6 | HS | 17 | 37 |
| 18 | E | 43 | 31 | 1/S | 43 | 32 | T | 43 | 3 | M/ATB | 43 | 35 | T1/A | 43 | 33 | NT/TSX | 43 | 5 | PC/OS | 43 | 7 |
| | EB | 18 | 8 | 2 | 18 | 9 | R | 18 | 4 | MB | 18 | 36 | R1/B | 18 | 34 | NR/RSX | 18 | 6 | HS | 18 | 37 |
| 19 | E | 44 | 31 | 1/S | 44 | 32 | T | 44 | 3 | M/ATB | 44 | 35 | T1/A | 44 | 33 | NT/TSX | 44 | 5 | PC/OS | 44 | 7 |
| | EB | 19 | 8 | 2 | 19 | 9 | R | 19 | 4 | MB | 19 | 36 | R1/B | 19 | 34 | NR/RSX | 19 | 6 | HS | 19 | 37 |
| 20 | E | 45 | 31 | 1/S | 45 | 32 | T | 45 | 3 | M/ATB | 45 | 35 | T1/A | 45 | 33 | NT/TSX | 45 | 5 | PC/OS | 45 | 7 |
| | EB | 20 | 8 | 2 | 20 | 9 | R | 20 | 4 | MB | 20 | 36 | R1/B | 20 | 34 | NR/RSX | 20 | 6 | HS | 20 | 37 |
| 21 | E | 46 | 31 | 1/S | 46 | 32 | T | 46 | 3 | M/ATB | 46 | 35 | T1/A | 46 | 33 | NT/TSX | 46 | 5 | PC/OS | 46 | 7 |
| | EB | 21 | 8 | 2 | 21 | 9 | R | 21 | 4 | MB | 21 | 36 | R1/B | 21 | 34 | NR/RSX | 21 | 6 | HS | 21 | 37 |
| 22 | E | 47 | 31 | 1/S | 47 | 32 | T | 47 | 3 | M/ATB | 47 | 35 | T1/A | 47 | 33 | NT/TSX | 47 | 5 | PC/OS | 47 | 7 |
| | EB | 22 | 8 | 2 | 22 | 9 | R | 22 | 4 | MB | 22 | 36 | R1/B | 22 | 34 | NR/RSX | 22 | 6 | HS | 22 | 37 |
| 23 | E | 48 | 31 | 1/S | 48 | 32 | T | 48 | 3 | M/ATB | 48 | 35 | T1/A | 48 | 33 | NT/TSX | 48 | 5 | PC/OS | 48 | 7 |
| | EB | 23 | 8 | 2 | 23 | 9 | R | 23 | 4 | MB | 23 | 36 | R1/B | 23 | 34 | NR/RSX | 23 | 6 | HS | 23 | 37 |
| 24 | E | 49 | 31 | 1/S | 49 | 32 | T | 49 | 3 | M/ATB | 49 | 35 | T1/A | 49 | 33 | NT/TSX | 49 | 5 | PC/OS | 49 | 7 |
| | EB | 24 | 8 | 2 | 24 | 9 | R | 24 | 4 | MB | 24 | 36 | R1/B | 24 | 34 | NR/RSX | 24 | 6 | HS | 24 | 37 |

***Note 1:*** Connector wiring is the same for both "A" and "B" digroups.

***Note 2:*** Pins 50 and 25 of each connector are spares.

*Not supplied on 628008.

## TABLE F

## 628013 AND 628018 MULTIPLEX SHELF CONNECTOR WIRING

| CHAN # | P25 | | | P26 | | | P27 | | | P28 | | | P29 | | | P30† | | | P31 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MDF | P25 J25 PIN # | CU PIN # | MDF | P26 J26 PIN # | CU PIN # | MDF | P27 J27 PIN # | CU PIN # | MDF | P28 J28 PIN # | CU PIN # | MDF | P29 J29 PIN # | CU PIN # | MDF | P30 J30 PIN # | CU PIN # | MDF | P31 J31 PIN # | CU PIN # |
| 1 | E | 26 | 31 | 1/S | 26 | 32 | T | 26 | 3 | EB | 26 | 8 | T1/A | 26 | 33 | NT/TSX | 26 | 5 | PC/OS | 26 | 7 |
| | M/ATB | 1 | 35 | 2 | 1 | 9 | R | 1 | 4 | MB | 1 | 36 | R1/B | 1 | 34 | NR/RSX | 1 | 6 | HS | 1 | 37 |
| 2 | E | 27 | 31 | 1/S | 27 | 32 | T | 27 | 3 | EB | 27 | 8 | T1/A | 27 | 33 | NT/TSX | 27 | 5 | PC/OS | 27 | 7 |
| | M/ATB | 2 | 35 | 2 | 2 | 9 | R | 2 | 4 | MB | 2 | 36 | R1/B | 2 | 34 | NR/RSX | 2 | 6 | HS | 2 | 37 |
| 3 | E | 28 | 31 | 1/S | 28 | 32 | T | 28 | 3 | EB | 28 | 8 | T1/A | 28 | 33 | NT/TSX | 28 | 5 | PC/OS | 28 | 7 |
| | M/ATB | 3 | 35 | 2 | 3 | 9 | R | 3 | 4 | MB | 3 | 36 | R1/B | 3 | 34 | NR/RSX | 3 | 6 | HS | 3 | 37 |
| 4 | E | 29 | 31 | 1/S | 29 | 32 | T | 29 | 3 | EB | 29 | 8 | T1/A | 29 | 33 | NT/TSX | 29 | 5 | PC/OS | 29 | 7 |
| | M/ATB | 4 | 35 | 2 | 4 | 9 | R | 4 | 4 | MB | 4 | 36 | R1/B | 4 | 34 | NR/RSX | 4 | 6 | HS | 4 | 37 |
| 5 | E | 30 | 31 | 1/S | 30 | 32 | T | 30 | 3 | EB | 30 | 8 | T1/A | 30 | 33 | NT/TSX | 30 | 5 | PC/OS | 30 | 7 |
| | M/ATB | 5 | 35 | 2 | 5 | 9 | R | 5 | 4 | MB | 5 | 36 | R1/B | 5 | 34 | NR/RSX | 5 | 6 | HS | 5 | 37 |
| 6 | E | 31 | 31 | 1/S | 31 | 32 | T | 31 | 3 | EB | 31 | 8 | T1/A | 31 | 33 | NT/TSX | 31 | 5 | PC/OS | 31 | 7 |
| | M/ATB | 6 | 35 | 2 | 6 | 9 | R | 6 | 4 | MB | 6 | 36 | R1/B | 6 | 34 | NR/RSX | 6 | 6 | HS | 6 | 37 |
| 7 | E | 32 | 31 | 1/S | 32 | 32 | T | 32 | 3 | EB | 32 | 8 | T1/A | 32 | 33 | NT/TSX | 32 | 5 | PC/OS | 32 | 7 |
| | M/ATB | 7 | 35 | 2 | 7 | 9 | R | 7 | 4 | MB | 7 | 36 | R1/B | 7 | 34 | NR/RSX | 7 | 6 | HS | 7 | 37 |
| 8 | E | 33 | 31 | 1/S | 33 | 32 | T | 33 | 3 | EB | 33 | 8 | T1/A | 33 | 33 | NT/TSX | 33 | 5 | PC/OS | 33 | 7 |
| | M/ATB | 8 | 35 | 2 | 8 | 9 | R | 8 | 4 | MB | 8 | 36 | R1/B | 8 | 34 | NR/RSX | 8 | 6 | HS | 8 | 37 |
| 9 | E | 34 | 31 | 1/S | 34 | 32 | T | 34 | 3 | EB | 34 | 8 | T1/A | 34 | 33 | NT/TSX | 34 | 5 | PC/OS | 34 | 7 |
| | M/ATB | 9 | 35 | 2 | 9 | 9 | R | 9 | 4 | MB | 9 | 36 | R1/B | 9 | 34 | NR/RSX | 9 | 6 | HS | 9 | 37 |
| 10 | E | 35 | 31 | 1/S | 35 | 32 | T | 35 | 3 | EB | 35 | 8 | T1/A | 35 | 33 | NT/TSX | 35 | 5 | PC/OS | 35 | 7 |
| | M/ATB | 10 | 35 | 2 | 10 | 9 | R | 10 | 4 | MB | 10 | 36 | R1/B | 10 | 34 | NR/RSX | 10 | 6 | HS | 10 | 37 |
| 11 | E | 36 | 31 | 1/S | 36 | 32 | T | 36 | 3 | EB | 36 | 8 | T1/A | 36 | 33 | NT/TSX | 36 | 5 | PC/OS | 36 | 7 |
| | M/ATB | 11 | 35 | 2 | 11 | 9 | R | 11 | 4 | MB | 11 | 36 | R1/B | 11 | 34 | NR/RSX | 11 | 6 | HS | 11 | 37 |
| 12 | E | 37 | 31 | 1/S | 37 | 32 | T | 37 | 3 | EB | 37 | 8 | T1/A | 37 | 33 | NT/TSX | 37 | 5 | PC/OS | 37 | 7 |
| | M/ATB | 12 | 35 | 2 | 12 | 9 | R | 12 | 4 | MB | 12 | 36 | R1/B | 12 | 34 | NR/RSX | 12 | 6 | HS | 12 | 37 |
| 13 | E | 38 | 31 | 1/S | 38 | 32 | T | 38 | 3 | EB | 38 | 8 | T1/A | 38 | 33 | NT/TSX | 38 | 5 | PC/OS | 38 | 7 |
| | M/ATB | 13 | 35 | 2 | 13 | 9 | R | 13 | 4 | MB | 13 | 36 | R1/B | 13 | 34 | NR/RSX | 13 | 6 | HS | 13 | 37 |
| 14 | E | 39 | 31 | 1/S | 39 | 32 | T | 39 | 3 | EB | 39 | 8 | T1/A | 39 | 33 | NT/TSX | 39 | 5 | PC/OS | 39 | 7 |
| | M/ATB | 14 | 35 | 2 | 14 | 9 | R | 14 | 4 | MB | 14 | 36 | R1/B | 14 | 34 | NR/RSX | 14 | 6 | HS | 14 | 37 |
| 15 | E | 40 | 31 | 1/S | 40 | 32 | T | 40 | 3 | EB | 40 | 8 | T1/A | 40 | 33 | NT/TSX | 40 | 5 | PC/OS | 40 | 7 |
| | M/ATB | 15 | 35 | 2 | 15 | 9 | R | 15 | 4 | MB | 15 | 36 | R1/B | 15 | 34 | NR/RSX | 15 | 6 | HS | 15 | 37 |
| 16 | E | 41 | 31 | 1/S | 41 | 32 | T | 41 | 3 | EB | 41 | 8 | T1/A | 41 | 33 | NT/TSX | 41 | 5 | PC/OS | 41 | 7 |
| | M/ATB | 16 | 35 | 2 | 16 | 9 | R | 16 | 4 | MB | 16 | 36 | R1/B | 16 | 34 | NR/RSX | 16 | 6 | HS | 16 | 37 |
| 17 | E | 42 | 31 | 1/S | 42 | 32 | T | 42 | 3 | EB | 42 | 8 | T1/A | 42 | 33 | NT/TSX | 42 | 5 | PC/OS | 42 | 7 |
| | M/ATB | 17 | 35 | 2 | 17 | 9 | R | 17 | 4 | MB | 17 | 36 | R1/B | 17 | 34 | NR/RSX | 17 | 6 | HS | 17 | 37 |
| 18 | E | 43 | 31 | 1/S | 43 | 32 | T | 43 | 3 | EB | 43 | 8 | T1/A | 43 | 33 | NT/TSX | 43 | 5 | PC/OS | 43 | 7 |
| | M/ATB | 18 | 35 | 2 | 18 | 9 | R | 18 | 4 | MB | 18 | 36 | R1/B | 18 | 34 | NR/RSX | 18 | 6 | HS | 18 | 37 |
| 19 | E | 44 | 31 | 1/S | 44 | 32 | T | 44 | 3 | EB | 44 | 8 | T1/A | 44 | 33 | NT/TSX | 44 | 5 | PC/OS | 44 | 7 |
| | M/ATB | 19 | 35 | 2 | 19 | 9 | R | 19 | 4 | MB | 19 | 36 | R1/B | 19 | 34 | NR/RSX | 19 | 6 | HS | 19 | 37 |
| 20 | E | 45 | 31 | 1/S | 45 | 32 | T | 45 | 3 | EB | 45 | 8 | T1/A | 45 | 33 | NT/TSX | 45 | 5 | PC/OS | 45 | 7 |
| | M/ATB | 20 | 35 | 2 | 20 | 9 | R | 20 | 4 | MB | 20 | 36 | R1/B | 20 | 34 | NR/RSX | 20 | 6 | HS | 20 | 37 |
| 21 | E | 46 | 31 | 1/S | 46 | 32 | T | 46 | 3 | EB | 46 | 8 | T1/A | 46 | 33 | NT/TSX | 46 | 5 | PC/OS | 46 | 7 |
| | M/ATB | 21 | 35 | 2 | 21 | 9 | R | 21 | 4 | MB | 21 | 36 | R1/B | 21 | 34 | NR/RSX | 21 | 6 | HS | 21 | 37 |
| 22 | E | 47 | 31 | 1/S | 47 | 32 | T | 47 | 3 | EB | 47 | 8 | T1/A | 47 | 33 | NT/TSX | 47 | 5 | PC/OS | 47 | 7 |
| | M/ATB | 22 | 35 | 2 | 22 | 9 | R | 22 | 4 | MB | 22 | 36 | R1/B | 22 | 34 | NR/RSX | 22 | 6 | HS | 22 | 37 |
| 23 | E | 48 | 31 | 1/S | 48 | 32 | T | 48 | 3 | EB | 48 | 8 | T1/A | 48 | 33 | NT/TSX | 48 | 5 | PC/OS | 48 | 7 |
| | M/ATB | 23 | 35 | 2 | 23 | 9 | R | 23 | 4 | MB | 23 | 36 | R1/B | 23 | 34 | NR/RSX | 23 | 6 | HS | 23 | 37 |
| 24 | E | 49 | 31 | 1/S | 49 | 32 | T | 49 | 3 | EB | 49 | 8 | T1/A | 49 | 33 | NT/TSX | 49 | 5 | PC/OS | 49 | 7 |
| | M/ATB | 24 | 35 | 2 | 24 | 9 | R | 24 | 4 | MB | 24 | 36 | R1/B | 24 | 34 | NR/RSX | 24 | 6 | HS | 24 | 37 |

***Note 1:*** Connector wiring is the same for both "A" and "B" digroups.

***Note 2:*** Pins 50 and 25 of each connector are spares.

†Not supplied on 628018.

## CHART 4 (Cont)

| STEP | PROCEDURE |
|---|---|

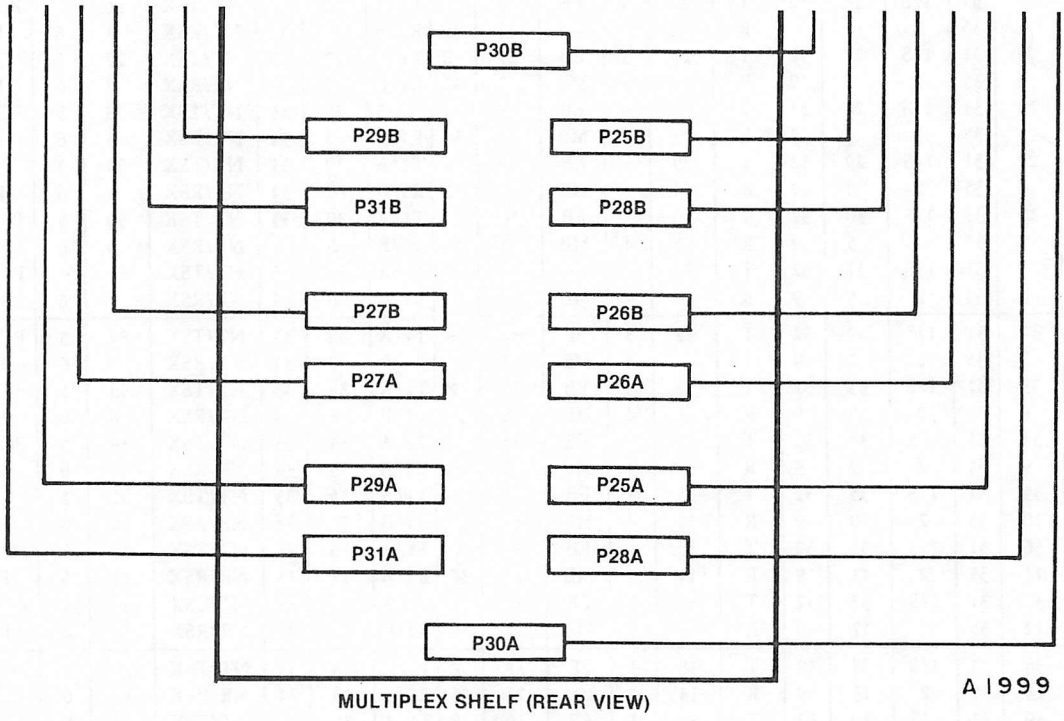



**Fig. 3—Cable Routing**

35 On the 628008 shelf, the NT, NR, PC/OS, and HS leads are not connectorized; also, on the 628018 shelf, the NT and NR leads are not connectorized. If these leads are to be used, they can be accessed at the following pins on each channel unit connector (Table G).

**TABLE G**

**NON-CONNECTORIZED LEADS**

| LEAD | CHANNEL UNIT CONNECTOR PIN NO. |
|---|---|
| NT or TSX | 5 |
| NR or RSX | 6 |
| PC/OS | 7 |
| HS | 35 |

## CHART 5

## PRETEST

**APPARATUS:**

Volt-ohm meter (VOM) (WE KS-14510, Triplett 630, or equivalent)

| STEP | PROCEDURE |
|---|---|
| 1 | At the FADP or power board, verify that the following fuses are removed.<br><br>(a) MPX TERM fuse supplying battery to shelf.<br>(b) TALK BATTERY fuse supplying talk battery to shelf.<br>(c) 20-Hz fuse supplying 20 Hz to bay.<br>(d) – 48-ABS fuse supplying – 48 ABS to bay. |
| 2 | Connect VOM between the following points on the shelf backplane to determine if any power inputs are shorted to ground (Fig. 1).<br><br>(a) TB1-3 to TB1-1<br>(b) TB1-5 to TB1-1<br>(c) 20-Hz pin to GND pin for both A and B digroups.<br>(d) – 48-ABS pin to TB1-1 for both A and B digroups.<br><br>***Requirement:*** VOM reads infinity in each case. |
| 3 | At the FADP or power board, reinstall fuses which were previously removed.<br><br>***Requirement:*** Fuses do not open. |
| 4 | Connect VOM across TB1-3 and TB1-1.<br><br>***Requirement:*** VOM reads between – 44 and – 56 Vdc. |
| 5 | Connect VOM across TB1-5 and TB1-1.<br><br>***Requirement:*** VOM reads between – 44 and – 56 Vdc. |
| 6 | Connect VOM across 20-Hz pin and GND pin for both Digroup A and B.<br><br>***Requirement:*** VOM reads between 85 and 135 Vrms for both digroups. |
| 7 | Connect VOM across – 48-ABS pin and TB1-1.<br><br>***Requirement:*** VOM reads between – 44 and – 56 Vdc. |